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POPULATION DYNAMICS AND THE ENVIRONMENT

(Séance / Session 5)

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CONTENTS

Introduction	4
Demographic differences between the main regions in Montenegro	5
Distribution of the population of Montenegro will continue to move in the current direction?	8
Population dynamics and environment	9
The challenges and the issues for future	11
Summary	12
Reference	12



Introduction

The Montenegro is situated in South-Eastern Europe, in the western of the Balkan Peninsula. According to the geochartical location, it is western Balkan country bordering with four countries. It has a coast on the Adriatic Sea to the south-west and is bordered by Croatia to the west, Bosnia and Herzegovina to the northwest and Serbia to the northeast, Kosovo to the east and Albania to the southeast. The length of the borders is 614 km in total. The Montenegro covers an area of 13.812 km². The relief is mostly hilly and mountainous. According to the Census in 2003, the total population of the Montenegro is 620.145 inhabitants. The gender structure shows almost equal participation of both genders (49.2% men and 50.8% women). In the Montenegro dominates a sub Mediterranean climate with characteristic warm and dry summers, and cold and humid winters.

The mean annual temperatures increase from the north to the south of the country. The longest river is Lim, 220 km and mostly it flows through the east part of the country. Rivers Moraca (99.5 km) and Zeta (65 km) flows through central region and their basin occupies biggest part of the territory which is valley. On the east border there is Skadar Lake 369.7 km² (147.9 km² belongs to Albania).The territory of the Montenegro lies on seismically active area.





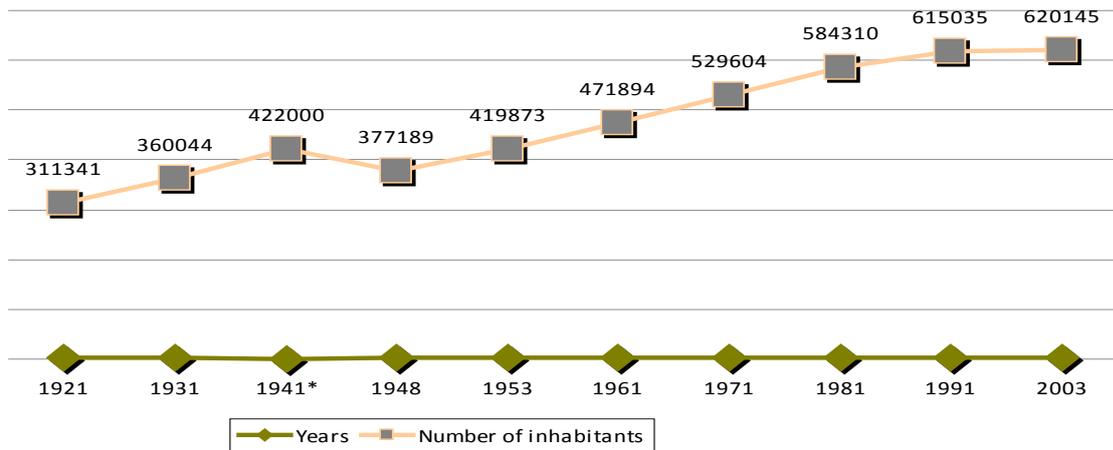
Demographic differences between the main regions of Montenegro

Montenegro is a small country, both in territory and in population. On the basis of a referendum held on 21 May 2006, Montenegro declared independence at 3 June of that year. According to last Census of population, households and dwellings, conducted in 2003, the total population was 620.145 inhabitants. The gender structure shows approximately equal participation of both genders (49.2% men and 50.8% women). The territorial distribution of the population in Montenegro expresses significant inequality. The 61,9 % of the population live in the cities (there are 21 cities in Montenegro), where the biggest concentration is in the capitol Podgorica (36.5 % of the population who live in cities). Large part of the rural settlements (total number of settlements is 1256) are completely depopulated or have extremely small number of inhabitants, and in close future, as result of inauspicious age structure (old population), will have no population.

The most accurate data on the dynamics of the total population is obtained through the population census. On the territory of the Montenegro it had been conducted eight population census. The first was in 1921, and last in 2003. In this period, the total population of Montenegro almost doubled from 311 thousand in 1921 to 614 in 2003 (Graph 1. shows population trends according to the population census). It should be emphasized that because of World War II, population census was not held, like it was planned in 1941. According to estimates, 31 mart 1941, immediately before the attack on Yugoslavia, Montenegro had 422 thousands inhabitants. High-increasing in population was achieved between the 1948 and 1953 (at a rate of 21.7%). That years, especially early 1950s represents period with the largest annual number of live-born children, an extremely high birth rate and total fertility rate. At the same time, the number of people who moved away from the Montenegro has surpassed the number of settlementer. But the resulting negative migration balance was small scale (2 thousand persons), which has largely been conditioned by the mass emigration during the World War II and early postwar year. That was the time of large organized migration (colonization). Therefore, high population growth and almost zero migration balance have led to record high rates of population growth. Since the second half of the 1950s, until the beginning of the 21st century, the growth rate of population of Montenegro was lower, but still positive.

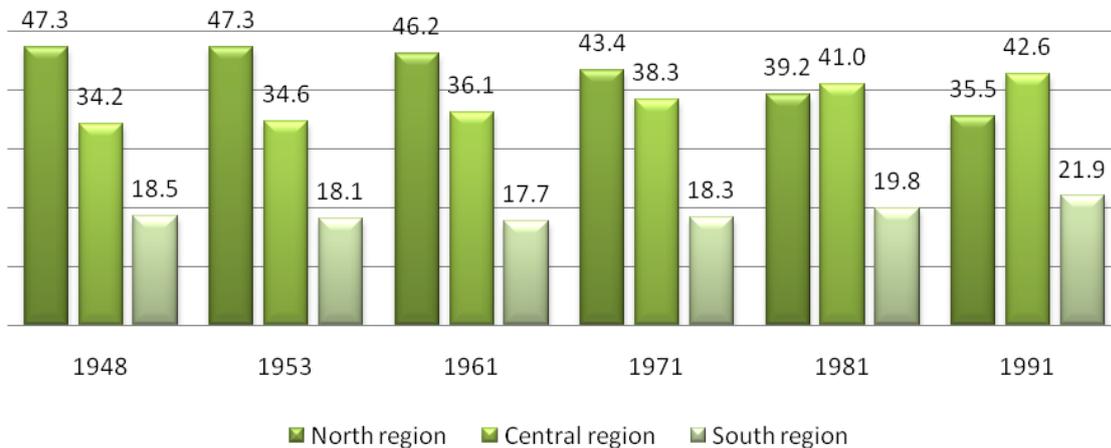
At the end of the second decade of the 20th century, after the World War I in Montenegro had been happened a demographic renewal, and the entire period between two world wars were characterized by intensive demographic growth. World War II also caused enormous demographic losses and re-reducing the number of inhabitants. Since World War II stopped until the present day, in Montenegro is present continuously increasing population.

Graph 1: Population dynamic thought Population Census 1921.- 2003.



But there is huge difference in tempo demographical growth between particularly areas. Mainly, in Montenegro we have three regions: North, Central and South region, but it is not valid administrative segmentation. Northern region consists of the municipalities Andrijevica, Berane, Bijelo Polje, Kolasin, Mojkovac, Plav, Pluzine, Pljevlja, Rozaje, Zabljak and Savnik. Central Region includes: Cetinje, Danilovgrad, Niksic and Podgorica, while the Southern region contains following municipalities Bar, Budva, Herceg-Novi, Kotor, Tivat and Ulcinj. The increase number of inhabitants was registered in all three major areas of the country, but large differences are recorded in the pace of demographic growth. Total population after II World War had been enlarged for 63%, if we look period 1948-1991 year. Population in North region rise only for one fifth, whereas population in South and Central region almost doubled. In 1953 nearly one half of total population lived in North region (47%), while now there is nothing but 31% of total population. It affects, that the South and Central region are more developed, but with all negative consequence which came with technological progress, bauxite, aluminium and iron plant which have no ecological collectors. Also, there are many other factories, cars, and different things which treats healthy environment. But on the other hand, in the North region there is many abandoned croplands, pastures, freshwater, food crops, forest products...

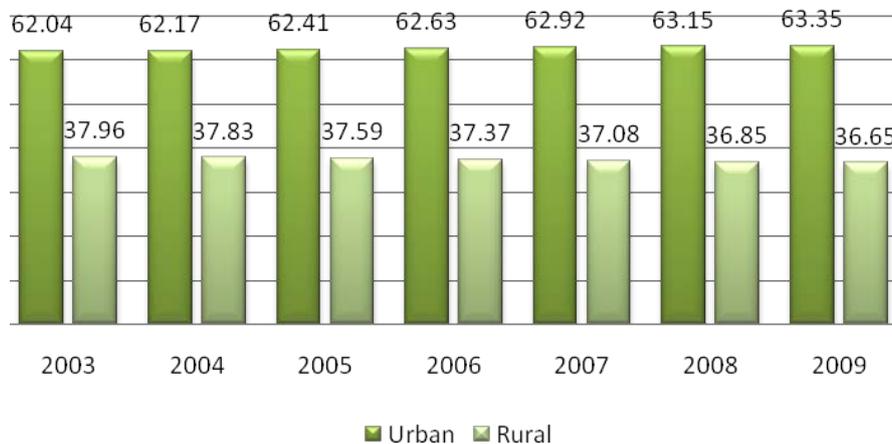
Graph 2: Participation of population in total population by region, 1948-2003



Working determines position of population in the Montenegro as part of general demographic and socio-economic status and processes. It turned out that the present distribution of population in Montenegro is very unfavorable. Entire regions have low population density and depopulation is affected. The villages are almost empty; people are concentrating about a small number of core settlements, coast, etc. Most densely populated and overpopulated regions record further growth of population, while the sparsely populated exposed to constant depopulation. All this implies the abandonment of villages and increasing population in cities and rural parts of countries.

If you look at the following Graph 3, we see that the number of inhabitants in rural areas is decreasing, if we take the estimated population for the year 2009 we see that in the area urban live 63.35% population, while in the rural live 36.65%. Departure of young people from villages, primarily for economic reasons also influence the moving age limits in rural areas. Therefore, we have a settlement in which besides of depopulation prevails the older population.

Graph 3: Estimated number inhabitants (1. January) urban-rural in percents



With its population about 620 145 (Population Census 2003) or 44.9 people per km², Montenegro is more than a thinly populated European country. If we look at this data only came to the conclusion that Montenegro, considering in their natural and economic opportunities, have considerable advantage and it gives her an opportunity in the future. However, we know that behind the average population density is hiding a large range of values and a very unsteady distribution of the population and this situation shouldn't be considered as advantage.

The population of Montenegro, as result of a positive natural increase, is still keeping the positive direction of increase, but with significantly lower dynamics. According to estimates of population (2008) the total population is 628 804 inhabitants. In the period 1998-2008 the population increased was 20 898 persons or 3.44 %. The significant changes in direction of ageing issued changes in the age structure of the population. In the period 1998-2008, the participation of the young population (age group 0-14) in the total population decreased and the participation of the old population (age group 65 and over) increased.

Like we said the average population density was 44.9 inhabitants per km² (2008). Because of intensive migration movements on a lower territorial level huge differences in relation to the population density are registered. Podgorica the region with the biggest population density (124 inhabitants per km²) have almost ten time's bigger density then some municipalities at the North region, like Šavnik which have density 4.8 per km², upon this Plužine have density 4.6 inhabitants per km², Pljevlja with density of 25.4 inhabitants per km². Municipalities that include city settlement show higher density, while the purely rural municipalities are much less populated.

Montenegro, like many others Balkan countries, includes depopulated regions, like we have been seen, sometimes in a serious state of abandonment, alongside other highly dynamic regions which attract an ever larger proportion of the population.

Distribution of the population of Montenegro will continue to move in the current direction?

Many factors affects on the deployment and the layout of population: geographical (climate, relief, land, resources, relationships and organization of space), economic and social (level of economic development, economic and occupational structure of population, social organization, customs, behavior and goals of the population), political (method of management and responsibility of the organization), cleanses the demographic (differential birth rates and mortality rates of different areas, migration) and others. In addition, hereditary settlement structure (large and small settlements) have a special role, also the way the origin of cities, the degree exploitation of natural and human resources, the existence of state and other boundaries. Activities mentioned factors on the distribution of the population is very complex, it is difficult to understand (the time and space with other standpoint) that are factors in any weather prevailed. Modern approaches to the problem of the dynamics of population include consideration of linkages and interdependence of demographic processes and socio-economic development. Demographic heterogeneity implies and includes the spatial differences in density, such as general and special population density, number, size and type of settlement, and structural characteristics of the population, natural movement and migration.

The last decades of the 20th century was remarkable for Montenegro not only by political and socio-economic also and demographic processes. Some long-term processes are significantly accelerated (for example, the decline in fertility, demographic aging, the change of ethnic structure, emigration from the country, etc.), while others are significantly slowed or stop suddenly (urbanization, extension of life expectancy, etc.). Demographic development of Montenegro is marked with completely new processes, primarily mass forced immigration. Census results have confirmed that in Montenegro in the period 1991-2003 were present to increase the number of inhabitants. Observed by regions, it can be said that the trends that were present from the middle, and through all the last decade of the 20th century, especially during the 1970s and 1980s, were also typical for the period since 1991 until 2003. On the one hand the Northern Region continued depopulation, on the other hand the other two regions where the remains were present relatively intensive increase in population. Based on comparable census data from 2003 and 1991 in Northern region of the population in that period intercensal reduced by 17.5 thousand (definition 2003¹) and for 13.7 thousand (definition 2006).

Whether it is selected, "the definition of 2003" or "definition in 2006, in intercensal period 1991-2003 has achieved the highest average annual realizes significant reduction in the population, as well as the average annual growth rate reached the highest negative values (-6.8 ‰ and -5.3 ‰ to -4.6 ‰ in the period 1981-1991). Movement of the population remaining two regions (Central and South) and intercensal during the period 1991-2003 was diametrically opposed to the Northern region. Namely, in the last intercensal period average annual growth rate of the Montenegrin population and two regions were lower or approximately the same level as in the period 1981-1991. So the changes that took place in the last decade of the 20th century and the early years represented a continuation of decades, slowing their demographic growth. As a result, such as the prefix, and the intensity of different rates of population growth, the share of the Northern region in the total population of the country, according to the census of 2003, reduced to 31% (36% in 1991). It also means that for 55 years, the census of 1948, the Northern region share reduced from nearly half (47%) in less than a third (31%) of the total population. The center shares the same time, as well as the southern region in total population of Montenegro continued to increase, reaching up to then the largest percentage of value (45% or 24%).

¹ Different definition of population because of different methodology used in Population Census 2003

Moving the number of live births is under the direct influence of population changes, age and sex structure, and the level of fertility by age. In the period 1990-2000, in Montenegro, the changes in the level of fertility mainly conducted focus of his decline. Latest statistics indicate that in the last three years (from the 2005 until 2007) stopped negative trends in the domain of birth. Not only is the reduction of annual number of livebirds stopped, already noted its slight increase (from 7352 in 2005 to 7531 in 2006 and 7834 in 2007). For now, is not completely clear whether this is a brief increase in the scope of birth, or turn on the part of the beginning of long-term rehabilitation of the birth.

Relatively stable movement of the annual number of deaths, while continuously increases the total population, causing obvious tendency to decrease in general mortality rates. Mortality of the population in Montenegro is not characterized by significant differences among areas. Differences certainly exist, but they are not significantly expressed. These changes are largely conditioned by population size and region (all three are demographically small areas).

Population dynamics and environment

Population distribution in space has a significant impact on the environment by way of population density. Density after II World War was 30.4 habitants per km², according to areas: North 14.3, Central 10.5 and South 5.5 (Population Census 1953). After fifty years density increase to 44.5 habitants per km², but North region is on the same level, 14.3 habitants per km², while in central region we have 20.3, and in South 10.6 habitants per km²

Population and environmental issues are very complex and linked. They create great number changes which add to that complexity. Connection population-environment and our understanding of this issue will broaden in coming years. Research into the links between population factors and the environment is relatively young and undeveloped in Montenegro, and still riddled with controversy. Through the history, we have radically changed our cultures, our technologies, our consumption patterns, and the number of children we have, conditions of living...

Population distribution in space has a significant impact on the environment by way of population density. Also, different population factors, such as rates of growth, absolute growth, consumption, and migration and the application of various technologies, affect in the short term environment issues in Montenegro.

Fundamental elements of environment are natural resources (energy, freshwater, food crops, meat and fish, forest products); land use (croplands, pastures, minerals, migration, and urbanization); atmosphere (climate change, air pollution); ecosystems (mountains, forests, rivers, sea); biodiversity (herbal and animal species, conservation of forests and rivers)

Environmental problems in the Montenegro are similar to those in the other countries in the region. Numerous problems have been identified through different projects, studies and analyses. Problems with the municipal, industrial, hazardous, non-hazardous, and other types of waste, due to the absence of integrated system organized waste collection, transport, treatment or disposal at the landfills constructed in accordance with modern standards applicable for such facilities. Also, there are problems with the water resources pollution and absence of integrated effluent water treatment (household and industrial) on the whole territory of the country; air pollution, with different intensity in different parts of the country, soil contamination, resulting in contamination of agricultural products with inadequate quality that originate from the areas with contaminated soils.

Richness and heterogeneity of species and ecosystems, and the high degree of relicts and endemism are the main characteristics of biological diversity in the Montenegro. Besides the fact that the diversity of flora and fauna

has not been completely studied, yet, according to the available findings, it shows great richness. Forests, traditionally, mean a resource that provides material goods. But, besides their ownership and purpose, forests also have production, protection functions and functions useful for the society. Production function of forests serves the goal of production of wood and other forest products. Protection functions of forests provide protection of biodiversity, prevention of erosion, etc. Socially useful functions of forests are related to sustainable development and environment improvement achieved through positive influence on climate and water regime, production of oxygen and quality of the living environment. The economic, social and ecological functions of forests are of great importance for the sustainable development of society and for the improvement of the quality of life.

The soil is constituent part of the environment, together with the atmosphere and the hydrosphere, and it represents most precious natural resource without which the life of the mankind, the fauna and the flora, is impossible. The influences on soil caused by human's activities continuously increase. This leads to unsustainable level of soil erosion, as well as its chemical contamination and biological degradation. Additionally, the uses of agricultural soils of good quality have changed with the spread of urbanization and infrastructure development. The prevention of soil degradation presents a big challenge. This is achieved by special measures of soil protection and management policy, as well as by including the issues of soil protection in the other sector policies i.e. agriculture, forestry, water management, transport and others.

Forest damages are common phenomenon and they can be caused by various factors. Mostly, they are damages caused by insects, plant diseases or fire damages. But, there is significant human factor. Number of forests is falling down every year, because of felling of trees for industrial production and fire-wood mostly. On the other side it is small number mean that is invest in afforest. Also, we cannot neglect the damage that man deliberately causes to the forest, such as the case of the illegal wood-cutting, which is, unfortunately, quite present in our forests.

People care less about environment, about their surroundings. Especially in cities, where every day increases the number of inhabitants, as we have already said, people leave the village mostly for economic reasons. In the cities are manufacturing facilities that, no matter how that is invested in various types of collectors, still violate the environment, starting of air, water, earth ... and on the other hand, abandoning their homes and reducing the number of inhabitants in rural areas is decreasing agricultural land, pastures, comes to the devastation of some settlements, and their total abandonment.

Driving forces are social and economic factors and activities that cause either the increase or mitigation of pressures on the environment. They may, for example, include the scope of economic, transport or tourist operations. Pressures are represented by direct anthropogenic pressures and impacts on the environment, such as pollutant emissions or the consumption of natural resources. State relates to the current state and trends of the environment that determine the level of air, water body and soil pollution, the biodiversity of species within individual geographical regions, the availability of natural resources, such as timber and fresh water. Impact are the effects that the environmental changes have on human and non-human health status. Responses are society's reactions to environmental issues. They may include specific state measures, such as taxes on the consumption of natural resources. Decisions made by companies and individuals, such as corporate investments into pollution control or purchase of recycled goods by households are also important.

Need for enhanced activities for increasing the public awareness and education at all levels, emphasizing the aspect of transparency. Lack of complete and accurate data regarding the polluting substances and polluters, lack of integrated approach to environmental problems solving, especially in the areas of water resources management and waste management, as well as the lack of capital investments to finance the needed upgrading of the infrastructure in these areas, result in further slowing down of the processes for setting up an efficient system for environment protection in the Montenegro.

The challenges and the issues for future

This demographic heterogeneity in Montenegro raises the question of the future development – as harmonious as possible – of demographically disparate national entities where prospects vary greatly between regions. It is necessarily to address the strategies and modes of action that can be implemented to promote balanced and sustainable coexistence, between regions with very different population dynamics and expectations, like in the North region where we have more and more depopulation.

Projections are extremely important method not only in the demographic sciences, but also in the planning of social and economic development. They are especially important for creating images on the future movement and changes in population structure, or for determining the future demographic policy. They show what will be the development of population based on the hypothesis that may, but need not be achievable in the time of their posting. They are made for short, medium or long term period.

Existing demographic indicators (data on births, mortality, population growth, migration flows, and age and gender structure) show that the distribution of the population of Montenegro will continue to move in the current direction, which will have many consequences to environment. Also, this means that seriously problems to equalized development.

According to population projections 2005-2050², if we look at medium fertility variant, the expected mortality and expected migration which was selected as the most realistic to achieve, Montenegro will be a positive natural growth area in the coming five decades. In the Table 4 we can see that increase of population. We still have a disproportionate growth of population in the Northern region, compared to Southern and Central region.

Table 1: Population projections of Montenegro populations by regions

	Years				
	2010	2020	2030	2040	2050
Montenegro	641966	672686	712592	748730	783479
Nort region	191624	192779	199667	205949	211286
Central region	295408	313772	334218	352987	370703
South region	154934	166135	178707	189794	201490

In the coming period should devote more attention to our surroundings and environment, to improve living conditions. Some of the general goals, which would lead to that system of environmental protection would have been more functional and efficient, could be integration of environmental policy into other sector policies, strengthening of the administrative structures needed for providing efficient environmental management, establishment of a platform for efficient implementation and compliance with environmental requirements through the process of capacity building for efficient environmental management at all management levels, through close collaboration between the responsible authorities on horizontal and vertical levels, motivating the industry, the service providers and other stakeholders in the environmental area for undertaking greater responsibility for the protection of the environment, solving important environmental problems of national importance, increasing the degree of fulfillment of the obligations deriving from regional and global environmental agreements, last but not least, increasing the investment level in the area of the environment in order to achieve the EU standards.

² Demographic trends in Montenegro', Goran Penev, Statistical Office of Montenegro-Monstat, Podgorica, 2009

Summary

There is an important linkage between such factors as human population density, rate of growth, consumption and the choice of particular technologies on the one hand, and the state of the environment on the other. The quantitative analysis of such relationships has by no means been adequately pursued, and they are often poorly understood and represented. For these reasons, it is of great importance to make what we do know accessible to both specialist and broader audiences, as a basis for developing theory further and for making the best decisions we can now. Although, it is difficult to see the pertinent facts clearly and without bias. General statements, speculation and intuitive deductions about the impacts of various aspects of human population on the environment are no longer sufficient as a basis for effective action, and additional empirical evidence and analyses are badly needed.

Like we said, Montenegro is small and young country which is on the way of conservation development and had to care about every aspects of that process, according that it is very important to define link between population dynamics and the environment. It's opening chapters and illustrates the various ways in which population factors, such as rates of growth, absolute growth, consumption, migration and the application of various technologies, affect both in the short term and more enduringly the health of the country and ecosystems. We need to understand the way in which population; consumption and technology create their impact, to review that impact across the most critical fields, and to find ways of using our understanding of the links to inform policy. Overall human pressure on the environment is a product of three factors: population, consumption per person and technology. Population is the total number of people, consumption relates to the amount each person consumes, and technology determines how many resources are used and how much waste or pollution is produced for each unit of consumption.

The population of Montenegro, as result of a positive natural increase, is still keeping the positive direction of increase. Because of departure of young people from villages, primarily for economic reasons there is big chance that great part of north area of Montenegro would have been depopulated. There is many reasons because we should pay attention on population dynamics and environmental issues. That is very complex and linked things and we can't ignore influence population at environment, and opposite.

Reference

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3. www.iucn.org
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